

## Seeing Eye to Eye on Ophthalmic Regional Anesthesia

To the Editor:

<sup>1</sup>The review article on ophthalmic regional anesthesia by Nouvellon *et al.*<sup>1</sup> was engaging, particularly the cadaver photographs elucidating the spread of local anesthetic agent within the orbit as well as the links to supplemental digital content.

The authors are to be commended for their comprehensive discourse. However, their assertions regarding akinesia, reproducibility, and reblock rates for peribulbar (extraconal) anesthesia require greater clarification. A review of the literature, more current than quoted in their report, suggests the statement “an additional injection is required in as many as 50% of cases” may be misleadingly excessive.<sup>2–4</sup>

The efficacy and low complication rate of extraconal ophthalmic blockade is well documented. In a group of 200 patients, Ghali and Hafez<sup>2</sup> compared 5–7 ml peribulbar anesthesia using a single inferotemporal injection or a combined inferotemporal/superomedial technique. The reinjection rates for these two groups were 7% and 16%, respectively. Clausel *et al.*<sup>3</sup> also evaluated single-shot peribulbar anesthesia for cataract surgery using local anesthetic volumes of 5–6 ml. Ninety of their 101 patients had complete akinesia at 10 min, and surgical conditions were deemed good in all cases. Similarly, Rizzo *et al.*,<sup>4</sup> in a sample of 857 patients, evaluated the efficacy of a single injection of 2% lidocaine adopting a medial percutaneous approach. Akinesia was reportedly attained in 85.6% of patients 2 min after injection. Furthermore, surgical anesthesia was adequate in 100% of cases within 7 min, and no patients required block supplementation. By contrast, Luchetti *et al.*<sup>5</sup> compared the efficacy of ropivacaine 0.75% and bupivacaine 0.5%-mepivacaine 2% in a study sample of 2,000 patients. They achieved satisfactory sensory blockade in all cases but noted a reinjection rate of 30–34% to attain complete eye immobility.

In terms of akinesia and reproducibility, the ultimate efficacy of local anesthetic infiltration into the extraconal space (peribulbar ophthalmic anesthesia) is governed by a number of factors. These include technique style (*e.g.*, intraorbital position of needle tip), composition of local anesthetic solution, use of the spreading agent hyaluronidase, and the nature and duration of the specific ophthalmic surgical procedure.

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(Accepted for publication March 2, 2011.)

## In Reply:

We thank Dr. Palte for his interest in our work and pertinent comments.<sup>1</sup> The references he cites are accurate. Concerning the relatively poor reproducibility of peribulbar anesthesia efficacy, our sentence should have been better formulated, such as: “Depending on the surgeon’s request for akinesia, an additional injection may be required in 0% to as high as 50% of cases.” That might help to understand why we cited only the highest rate available in the literature.<sup>2</sup> We agree that the reblock rate of peribulbar anesthesia may vary dramatically depending on block quality but also on surgeon requests and the actual procedure.

The surgical procedure variability (*i.e.*, phakoemulsification; manual extracapsular cataract extraction, which is still in use in many developing countries; or posterior segment surgery) may explain the surgeon’s request for a more or less efficacious block. Surgeon skill/experience is also a parameter to take into account. Indeed, for phakoemulsification performed by a skillful surgeon in selected patients, topical anesthesia alone (no akinesia), or even no anesthesia at all may be enough.<sup>3</sup>

A second parameter of variability is the numerous variants of peribulbar techniques (including number of injections, site of needle introduction, volume injected, and local anesthetic choice and adjuvants), which renders comparisons difficult.

Moreover, the reblock rate depends on the evaluation of block quality, which frequently is assessed *via* completely subjective methods, such as “deemed by the surgeon” with no other objective measurement. Therefore, reblock rate probably is not the best way to objectively assess block quality and compare various technique evaluations in the literature.

To conclude, based on clinical and anatomic studies, we are convinced that sub-Tenon blocks produce a more consistent (reproducible) anesthesia than do peribulbar injections. This probably is due to anatomic reasons explained in our previous articles.<sup>4-7</sup> From an anatomic point of view, the difference between both technique groups can be better understood by using an analogy with perimedullary blocks: peribulbar injection can be assimilated to epidural injection, whereas sub-Tenon block corresponds to spinal injection.

This reply is dedicated to Emmanuel Nouvellon, M.D., M.Sc., who passed away just after the publication of the cited review.

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(Accepted for publication March 2, 2011.)

## Don't Forget the Heart When Looking at the Risk of Postoperative Pulmonary Complications

To the Editor:

We read with great interest the recent study by Canet *et al.*<sup>1</sup> In this investigation, based on 2,464 surgical patients, the incidence of postoperative pulmonary complications (PPCs) was 5%, with a related mortality rate at Day 30 of 19.5% (95% CI, 12.5-26.5%).

Predicting risk factors for PPCs is a cornerstone of better patient management. However, reliable knowledge of PPC incidence in a broad, heterogeneous surgical population remains difficult because of nonrepresentative samples and

statistical flaws. Furthermore, definitions of PPC are often not explicit and differ among studies. The recent study of Canet *et al.*<sup>1</sup> has similarities with that of McAlister *et al.*<sup>2</sup> Both investigations were built with a strong statistical methodology and included a large representative surgical population. Yet, the 5% incidence of PPC reported by Canet *et al.*<sup>1</sup> is almost double the 2.7% reported by McAlister *et al.*<sup>2</sup> This higher rate of complications observed by Canet *et al.*<sup>1</sup> could be explained, in part, by the inclusion of emergency cases (14.2%), whereas McAlister *et al.*<sup>2</sup> included only scheduled cases. The risk of PPC increases significantly in emergency cases.<sup>3</sup> In addition, Canet *et al.*<sup>1</sup> included some thoracic surgical cases. Another major difference is related to the use of different PPC definitions. The diagnostic criteria used by McAlister *et al.*<sup>2</sup> were stricter, including supplementary therapeutic action, such as mechanical ventilation for respiratory failure, percutaneous intervention for treatment of pleural effusion, and bronchoscopic intervention for atelectasis.<sup>2</sup>

Nevertheless, the most striking result reported by Canet *et al.*<sup>1</sup> is not the high incidence of PPC *per se* but the high percentage of mortality (19.5%) associated with these cases. It seems difficult to conceive that PPC alone can explain this finding. A previous study by Lawrence *et al.*<sup>4</sup> showed that, in a cohort of patients undergoing major abdominal surgery, 33% who developed PPC also had cardiovascular complications. This result suggests that a significant proportion of patients studied by Canet *et al.*<sup>1</sup> also had cardiovascular complications that were not evaluated and that these complications may have been the cause of death in these patients.

In conclusion, further studies are necessary to examine prospectively comparative incidence, outcomes, and predictors of both types of complications.

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(Accepted for publication March 24, 2011.)